4.6 CULTURAL, HISTORICAL, AND PALEONTOLOGICAL RESOURCES

This section addresses potential impacts to cultural, historical, and paleontological resources that would potentially result from development of the proposed Project. No historic buildings or structures are present within the EOF, the new onshore pipeline corridor, nor the EMT.

4.6.1 Environmental Setting

Onshore Archaeological Resources

The EOF, the new onshore pipeline, and the EMT are all located within the Barbareño Chumash cultural area, which includes evidence of human occupation dating to over 9,500 years ago. Due to the rich food resources found on land and in the sea, Native American populations grew over time and their organization became more complex. The area's various sources of fresh water were ideal locations for permanent and semi-permanent village settlements that provided abundant fish, birds, and plants for hunting and gathering.

Current models of cultural evolution along the Santa Barbara Channel recognize that pre-historic peoples through time became increasingly dependent upon marine resources though these resources required greater energy to procure. Populations also became less dependent upon terrestrial resources such as large game animals due to growing pressures on the resource base. The need for more sophisticated subsistence technologies and group cooperation resulted in increasingly complex cultural interactions, culminating in the Chumash culture and complex social organization encountered by the Spanish in the 1500s (Arnold et. al. 1997; Glassow et. al. 1990; Wilcoxon et al. 1982). Climatic change during the transition from the Middle to Late Period around A.D. 1150 to 1300 may have played an important role in this process (Raab and Larson 1997), although others consider that pressures from increased population were also involved (Arnold et al.1997).

A cultural resources record search of relevant archaeological and historic documents was undertaken to identify existing archaeological resources that would be potentially affected by the Project. The following provides a summary of those findings.

EOF

A field survey of the EOF was conducted by an SAIC archaeologist on November 29, 2006. The survey identified substantial evidence of previous ground disturbance. Grading (i.e., cut and fill) was necessary to create a level area for the facility. It is reasonable to assume that installation of storage tanks and pipelines at the EOF would have resulted in substantial ground disturbances to a depth of four to ten feet since ground disturbances associated with the installation of infrastructure at the Applicant's Carpinteria Processing Facility extended four to ten feet deep (personal communication, Steve Grieg, 2006). However, it is possible that 10,000 year old landforms, formed before sea level rise and inundation, exist below the EOF. Therefore, it is not possible to completely dismiss the potential for Paleoindian Period archaeological sites that are buried approximately ten feet or more below the ground surface in the area of the EOF.

The seaward portion of the EOF consists of relatively loose beach sand that is prone to erosion and scour (i.e., the removal of sand due to wave action along the oceanfront). Due to the open exposure, the oceanfront is generally not considered suitable for occupation by prehistoric peoples. Additionally, due to the movement of sand on a seasonal basis (i.e. sand is generally scoured off the beach during the winter months as a result of high surf activity, but then is generally deposited during the summer months of gentle surf), intact prehistoric cultural material is generally not found along the oceanfront. Therefore, there is no archaeological sensitivity in the seaward portion of the EOF, and no potential for impacts.

Onshore Pipeline

A record search of the statewide Historical Resources Inventory (HRI) database at the Central Coast Information Center (CCIC) housed at UCSB was performed July 28, 2005, to identify recorded archaeological sites within one-quarter mile of the new onshore pipeline (site-specific information is contained in a confidential appendix that is not available to the public). Over 60 archaeological studies have been performed within one-quarter mile of the new pipeline corridor that extends within existing road rights-of-way and adjacent to existing water, gas, and electric utility services running parallel to, and north of, Highway 101. There is an existing The Gas Company pipeline corridor along much of the proposed pipeline corridor; and where appropriate, it is proposed to locate the new pipeline as close to The Gas Company pipeline as allowed. It appears that most, if not all, of the new onshore pipeline has been previously surveyed during various investigations.

Forty-five recorded prehistoric and historic archaeological sites are located within one-quarter mile of the new onshore pipeline. At least four of the recorded archaeological sites, CA-SBA-139, CA-SBA-83, CA-SBA-1676, and CA-SBA-1733, are located within the new pipeline corridor. They are described below based on definitions provided in Department of Parks and Recreation Archaeological Site Records.

CA-SBA-139 was described in 1929 as a large temporary camp where seed processing and stone tool manufacturing occurred. Investigations in 1960 documented a 350 feet (107 m) diameter site and recovered large quantities of ground stone tools for seed processing and chipped stone tools for food processing. By 1961, and again in 1986, subsequent site evaluations noted far fewer artifacts, and the southern portion of the site was described as being destroyed by highway construction while the western portion of the site was described as being destroyed by residential construction. However, in 1991 shovel test pit (STP) excavations for the SCE Hybrid Alternative Project identified relatively intact subsurface deposits in the northern portion of the site, along the south shoulder of the frontage road. Therefore, portions of this site may still exist within the proposed pipeline corridor.

CA-SBA-83 was described in 1929 as a long-term residential camp. In 1991, the site, described as a sparse lithic scatter, covered a 490 feet x 131 feet (150 m x 40 m) area and represented several discrete activity areas where stone tool manufacturing occurred. STP excavations in 1991 for the SCE Hybrid Alternative Project identified subsurface artifacts in the northern portion of the site, along the south shoulder of the frontage road, north of Highway 101 (within the proposed pipeline corridor). However, it was unclear if the subsurface artifacts were intact. The site was not relocated in 2000. Test unit excavations for the Level (3) Long Haul Fiber Optic Line Project in 2001 did not identify intact subsurface artifacts in the southern portion of the site, along the north side of the Union Pacific Railroad, south of Highway 101.

CA-SBA-1676, located immediately west of CA-SBA-83, was described in 1981 as a low density scatter of chipped stone artifacts representing a temporary stone tool manufacturing camp. In 1986, as part of the ARCO Pipeline Project, STPs were excavated to determine the northern site boundary (Chambers Group 1986). No artifacts were recovered, suggesting that CA-SBA-1676 did not extend north of Highway 101. However, in 1991, as part of the SCE Hybrid Alternative Project, STPs excavated north of Highway 101 and east of Canada de la Destiladera (within the proposed pipeline corridor) encountered artifactual material. Even though the soil appeared to be relatively intact, it was unclear whether the material retained its integrity. At that time the size of the site

was documented as 6,562 feet x 574 feet (2,000 m x 175 m). In 2001, as part of the Level (3) Long Haul Fiber Optic Line Project, test units were excavated in the southern portion of the site, along the north side of the Union Pacific Rail Road, south of Highway 101. No cultural material was recovered in the area tested.

Originally recorded in 1982, CA-SBA-1733 appears to be a long-term residential camp where more permanent and extensive occupation would take place based on the diverse accumulation of prehistoric cultural material including tools and food remains. Chipped stone artifacts, mammal and fish bone, and shellfish were noted. The site measured 984 feet x 410 feet (300 m x 125 m) and possibly extended from north of the frontage road, beneath Highway 101 and the Union Pacific Railroad, to the beach. CA-SBA-1733 would be cut by the proposed pipeline corridor along the frontage road.

An intensive Phase 1 archaeological field survey was performed by SAIC archaeologists on April 24, 2007, to identify all existing resources that would be potentially affected by the proposed Project. The pipeline route was surveyed in the mapped locations of CA-SBA-139, CA-SBA-83, CA-SBA-1676, and CA-SBA-1733. Vegetation including annual grasses and forbs limited the ground surface visibility to poor (0 to 10 percent). However, rodent burrow tailings allowed examination of sub-surface soils. No prehistoric or historic cultural materials were observed in the mapped locations of CA-SBA-139, CA-SBA-83, CA-SBA-1676, or CA-SBA-1733.

EMT

A record search of the statewide HRI database at the CCIC housed at UCSB was performed July 28, 2005, to identify recorded investigations and archaeological sites within one-quarter mile of the EMT (site-specific information is contained in a confidential appendix that is not available to the public). Nine archaeological studies have been performed within one-quarter mile of the EMT. Three of the nine studies performed covered the EMT.

Five recorded prehistoric sites are located within one-quarter mile of the EMT. Two of the five recorded prehistoric sites, CA-SBA-1327 and CA-SBA-2341, are located within the EMT.

CA-SBA-1327 is described as a scatter of chipped stone artifacts used for food processing and tool manufacture (i.e., retouched flakes and cores), ground stone milling artifacts for seed processing (i.e., a pestle fragment, oval manos), shellfish, and animal bone covering a 656 feet x 656 feet (200 m x 200 m) area. The cultural material was

observed in man-made embankments and graded areas around oil storage tanks and associated facilities. Two pieces of human bone were noted in the man-made embankments. Based on the diverse accumulation of prehistoric cultural material including tools and food remains, CA-SBA-1327 appears to have served as a long-term residential camp where more permanent and extensive occupation would take place.

CA-SBA-2341 is described as a midden (soil created by decomposition of prehistoric food remains over time) containing chipped stone artifacts (a projectile point, biface knives, and chert and obsidian waste flakes resulting from tool manufacture), ground stone artifacts (bifacial manos), a bone awl for punching holes in leather or use in basketry, shellfish, bone, and fire-affected rock from campfires. Limited significance testing indicated the midden covered a 180 feet x 164 feet (55 m x 50 m) area and was 27 inches (0.7 m) deep. The midden appeared to be fairly intact (undisturbed) despite previous grading activities. CA-SBA-2341 appears to have served as a long-term residential camp where more permanent and extensive occupation would take place, based on the diverse accumulation of prehistoric cultural material including tools and food remains.

Archaeological investigations have demonstrated that the integrity of both CA-SBA-1327 and CA-SBA-2341 has been compromised in large part by modern ground disturbances (SAIC 2000); however, it is possible that intact portions of both sites exist.

As discussed below, the potential significance of an archaeological site is related to its ability to yield information important in prehistory or history. Archaeologists consider that this ability is dependent upon the integrity (i.e., intactness, or degree to which the deposit has been disturbed) of the archaeological site soils. When a site deposit has been displaced horizontally and vertically through grading, the relationship of artifacts is lost. This precludes the ability to interpret their chronological relationship (i.e., is there evidence of how the lifestyles of site occupants changed over time in response to climate, availability of food resources, or population increases), and their spatial relationships (i.e., is the location of the artifacts within the site related to a specific activity, indicating that several different activities were undertaken at the site).

If present, intact portions of CA-SBA-139 have the potential to provide a better understanding of prehistoric populations. Although it is unclear whether subsurface artifacts at CA-SBA-83, CA-SBA-1676, and CA-SBA-1733 retain their integrity, if intact portions of these three sites are present, they would have the potential to help provide a better understanding of prehistoric populations.

If present, intact portions of CA-SBA-1327 and CA-SBA-2341 have the potential to help provide a better understanding of how prehistoric populations exploited nearby foods, together with marine resources in the vicinity.

Onshore Paleontological Resources

Paleontological resources are generally found in sedimentary rock units in which the boundaries of a sedimentary rock unit define the limits of paleontological sensitivity in a given region. Paleontological sites are normally discovered in cliffs, ledges, steep gullies, or along wave-cut terraces where vertical rock sections are exposed. Fossil material may be exposed by a trench, ditch, or channel caused by construction.

Paleontologists examine invertebrate fossil sites differently than vertebrate fossil sites. Invertebrate fossils in microscopic form such as diatoms, foraminifera, and radiolarians can be so prolific as to constitute major rock material in some areas. Invertebrate fossils normally are marine in origin, widespread, abundant, fairly well preserved, and predictable as to fossil sites. Therefore, the same or similar fossils can be located at any number of sites throughout Central California.

Vertebrate fossil sites are usually found in non-marine or continental deposits. Vertebrate fossils of continental material are usually rare, sporadic, and localized. Scattered vertebrate remains (mammoth, mastodon, horse, ground sloth, camel, and rodents) have been identified from the Pleistocene non-marine continental terrace deposits on Vandenberg Air Force Base (Gray 2003), but these resources would not be expected within the EOF, along the new onshore pipeline, in the EMT, or in the surrounding areas.

EOF

The majority of the infrastructure at the EOF is situated on Holocene floodplain deposits consisting of unconsolidated silt, sand, and gravel; however, the seaward portion of the EOF consists of beach sand deposits (Dibblee 1987). Therefore, the sensitivity for encountering important paleontological resources within the EOF is considered very low.

Onshore Pipeline

In general, the new onshore pipeline would be situated on Pleistocene older alluvium deposits, consisting primarily of relatively unconsolidated silt, sand, and gravel, and underlying Miocene Rincon Shale. However, Holocene floodplain deposits, consisting of unconsolidated silt, sand, and gravel, are found in canyon bottoms, and shale of the Miocene Monterey Formation is exposed along the margins of Bell Canyon and Canada

del Corral (Dibblee 1987 and 1988). Therefore, the sensitivity for encountering important paleontological resources along the new onshore pipeline is considered very low.

EMT

The EMT is situated on Pleistocene older alluvium deposits, consisting primarily of relatively unconsolidated silt, sand, and gravel. These alluvial deposits overlie the Miocene Sisquoc Shale, which is exposed in the coastal bluff northwest of the Project area and consists of silty, diatomaceous, clay shale. The majority of the onshore portion of the marine loading line similarly traverses older alluvium, underlain by Sisquoc Shale; however, the seaward 200 feet (60 m) of the pipeline is underlain by beach sand deposits (Dibblee 1987).

The invertebrate fossils that would be expected to exist along the new onshore pipeline and within the EMT as geologic rock units are widespread and abundant in many areas throughout Santa Barbara county. The overwhelming bulk of invertebrate fossil material in these rocks is due to the deposition of sediment in marine basins. Very seldom are vertebrate marine fossils such as whale, porpoise, seal, or sea lion found in marine rock units such as the Miocene Sisquoc Shale, Monterey Formation, and Rincon Shale found along the new onshore pipeline, within the EMT area of the Project site, and in the surrounding area. Therefore, the probability of encountering important paleontological resources within the EOF, along the new onshore pipeline, within the EMT, and in the surrounding area is considered very low.

Offshore Cultural Resources

The two general categories of offshore cultural resources, prehistoric and historic resources, are distinguished by their character as well as their date of origin. Prehistoric resources are further delineated based on their relationship to the worldwide rise in sea level known as the Holocene Transgression. In-situ remains predating the Holocene Transgression are usually situated on submerged landforms and are associated with ancient settlement sites. Confirmed pre-Holocene seafloor sites are rare because of the disturbance caused by the advancing Holocene shoreline. Consequently, most are located in sheltered wave environments and are preserved by a sediment cap. Prehistoric remains deposited subsequent to the Holocene Transgression are largely isolated artifacts which are deposited on the seafloor by cliff erosion, loss from fishing and trading canoes, ritual deposition, or random loss.

Figure 4.6-1
Shipwrecks in Santa Barbara County

Sources: Bureau of Land Management, 1978; CSLC, no date; NOAA Obstructions, no date; Adapted from http://www.sccoos.org/data/bathy/?r=2 accessed September 12, 2007.

Historic offshore resources are largely confined to remnants of shipwrecks in the Santa Barbara Channel. The earliest records of European shipping in the Channel date from the Cabrillo voyage in 1542. However, shipping and other maritime traffic did not become prevalent in the region until the late eighteenth century when the Missions and Spanish settlements at Santa Barbara and Lompoc were established. As the frequency of shipping increased, the incidence of shipwrecks also increased. As with many areas, the incidence of shipwrecks reported within the Channel are much higher in the nearshore region (Figure 4.6-1).

Prehistoric Offshore Cultural Resources

There has been little systematic search for submerged settlement sites in the Santa Barbara Channel, although finds of isolated prehistoric and historic artifacts are well documented. The inventory of known marine sites is based primarily upon reports from sport and professional divers. However, despite the unscientific origins of the marine sites data base, there is sufficient information available on which to delineate a zone in which a systematic survey program could be reasonably expected to yield discovery of previously unknown marine sites. On the basis of information compiled by Hudson (1976), a coastwise sensitive zone for marine sites extends along Santa Barbara County from Point Conception to the Ventura County line. Along its entire length, this sensitive zone extends from the surfline to a depth of 90 feet (27.5 m), the maximum depth at which marine sites have been regularly recorded. Within this zone, there is a good chance that other marine sites may exist.

Several seafloor features along the northern Santa Barbara Channel coastline have been interpreted as possible pre-Holocene in-situ remains of submerged village sites based on artifactual and bathymetric criteria (Hudson 1976). Previous cultural-resource field surveys documented one likely offshore prehistoric site in the Project vicinity (Woodward-Clyde 1982, 1983a, 1983b). Additional literature search and consultation indicated a total of five possible prehistoric marine sites in the Project vicinity (Chambers Group 1987). At that time, neither a comprehensive underwater investigation of these sites, nor a systematic search for other sites had been undertaken in the region. However, specific sub-areas were surveyed by marine archeologists, including portions of a proposed nearshore gas pipeline route near LFC (Horne 1975), and this Proposed project's survey area and alternative offshore pipeline route to LFC (Appendix F). The five potential prehistoric sites are:

- Marine 5 covering 104 acres, lying 98 feet (30 m) offshore, and located south of Naples;

- Marine 6 covering 33 acres, lying approximately one mile (1.6 km) offshore near Naples Reef;
- Marine 11 covering 8.6 acres, lying 492 feet (150 m) offshore in the vicinity of the Ellwood Pier;
- Marine 45 lying just over one-half mile (900 m) offshore in the Naples vicinity; and
- Marine 54 lying just offshore in the Coal oil Point area.

Hudson's reinterpretation of the typological and bathymetric characteristics of these candidate sites determined that only the first three were probable habitation sites, and confirmed that the archeological value of these three sites may be highly significant. However, Marine 5 and 6 are located near Naples Reef, well outside of the proposed Project area, and well shoreward of the alternative offshore pipeline route surveyed as part of this EIR (Figure 4.6-1). Similarly, Marine 11 lies outside of the region likely to be impacted by the proposed Project. Although Marine 11 lies close to the western boarder of this EIR's seafloor survey area, no evidence of this or other habitation sites were found along the existing pipeline corridor or along one possible alternative offshore pipeline route to LFC.).

Historic Offshore Cultural Resources

As the population of Santa Barbara, and California in general, increased throughout the twentieth century, the Santa Barbara Channel became a prominent shipping route for ships traveling between northern and southern California. The construction of Stearn's Wharf in 1872, and the Santa Barbara breakwater in 1928, provided the groundwork for the completion of the eventual present day harbor, further increasing the shipping industry in Santa Barbara. Commerce from shipping, especially in the fishing and oil industries, began to flourish through the 1960s when two new harbors were built in Ventura county, vastly increasing the access of recreational and industrial vessels to the Santa Barbara Channel.

The widespread availability of a valuable commodity such as oil in the Channel led the oil companies to actively increase exploration offshore of Santa Barbara. Concurrently with the larger fleets of boats came an increase in shipping accidents. Shipwreck data obtained from the Bureau of Land Management (BLM, 1978), NOAA obstructions database, and the California State Lands Commission (CSLC) shipwreck database indicate the possibility of five shipwrecks in the vicinity of the offshore portion of the

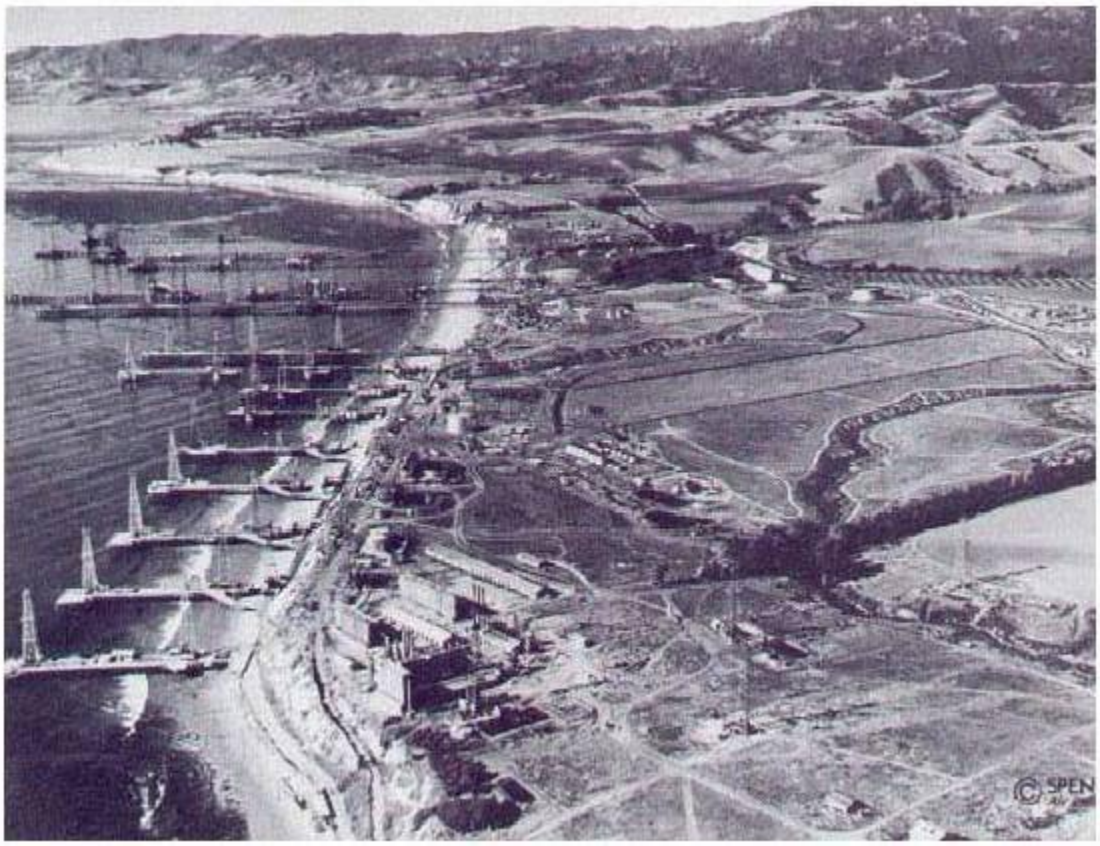
proposed Project (Figure 4.6-1). However, as with most shipwreck data, offshore locations were poorly measured and documented due to the lack of points of reference and the emergency nature of most accidents. In addition, post-abandonment drift, burial, and salvage operations can also affect the location of shipwreck remains.

The extensive history of offshore oil and gas development in the Project area also affects the ability to search for offshore cultural resources by occasionally interfering with recording and interpreting of electronic evidence of shipwrecks. The earliest offshore petroleum development in the Project region dates from the 1890s. A number of wells were drilled near the surf zone at various locations in the Project region during the 1930s and 1940s (see Figure 4.6-2), but large scale offshore exploration began in the 1950s with development of the Naples area by Phillips Petroleum. Offshore oil and gas exploration and development have left the seafloor with anchor drag marks, production and transport facilities, abandoned well sites, abandoned equipment, and debris from oil-pier demolition. These and other features are often detectable on swath bathymetric, side-scan sonar, and magnetometer records, and in some cases, may mask evidence of shipwrecks and other submerged cultural resources. In particular, substantial alteration of local magnetic fields by well casings, pipelines, ferromagnetic debris, and production platforms render magnetometry data almost useless in affected areas.

Two detailed archeological analyses have been conducted on seafloor data collected in the Project area. The first was a reinterpretation by Hunter (1984abcd) of sidescan sonar and magnetometer data collected for the proposed ARCO Coal Oil Point Project (Chambers Group 1986). He identified 67 anomalies that could not be otherwise attributed to geologic features, physical oceanographic conditions, or system operation. Following a conservative interpretation approach, these 67 anomalies were designated "potential cultural properties," even though the probability that any one of these anomalies actually represented a shipwreck was admittedly remote.

The second evaluation of seafloor features for cultural significance was conducted as part of this EIR (Appendix F). The analysis was based on a high-resolution multibeam bathymetric survey and photodocumentation by remotely operated vehicle (ROV). A total of 592 seafloor features were identified from the bathymetric data, but almost half were ascribed to active and abandoned fishing gear, particularly crab and lobster traps. The locations of the 67 Hunter anomalies did not coincide with features identified in this EIR's analysis of high-resolution bathymetry (Appendix F), nor did they coincide with seafloor obstructions listed in NOAA's Automated Wreck and Obstruction Information System (AWOIS) (NOAA 2007).

Figure 4.6-2
Ellwood Coast and Mesa in 1938



Source: CSLC, no date

Based on this EIR's analysis of seafloor features, it is unlikely that any of the original 67 Hunter anomalies represented actual cultural features. Discrepancies between the location of Hunter anomalies and seafloor features identified in more recent datasets could be due to improvements in navigational accuracy, but it is more likely that the majority of Hunter anomalies were transient crab or lobster traps.

The seafloor survey conducted as part of this EIR (Figure 4.6-1, Appendix F) was intended to identify seafloor features of biological, geohazard, or cultural interest that could be adversely impacted by the Project or its alternatives. The survey area extended 2600 feet (800 m) on either side of the existing pipeline route from Platform Holly to the EOF, and across a 1150-foot (350-m) swath along one possible alternative offshore pipeline route to the LFC (refer to Section 3 Alternatives). Bathymetry over the survey area extended from a water depth of 16 feet (5 m) to 250 feet (76 m).

An initial screening of seafloor features for potential cultural interest was conducted by interpreting high-resolution acoustic images within the swath bathymetric database. Often, the acoustic signature of a target seafloor feature is an indirect representation of the actual shape object, which may be partially buried. Consequently, interpretation of many acoustic signatures is not always conclusive as to the origin of the seafloor feature, or its cultural significance. Of the 592 features observed in the seafloor survey, 23 percent were categorized as unidentified bottom features (UBFs). Some of the larger UBSs that were in close proximity to Project activities were further investigated with magnetometer surveys and ROV dives.

Screening of seafloor features for their potential archaeological significance depends on a range of acoustic-image characteristics that are often indicative of cultural origin. The screening analysis used in this EIR examined the following characteristics of the acoustic images.

- Shape;
- Size;
- Aspect ratios;
- Sharp angular edges;
- 90-degree elements;
- Definitive shadows;
- High acoustic reflectivity of the target; and
- Consideration of the surrounding geology and uniformity of the surrounding seafloor.

Even when some of the characteristics are indicative of anthropogenic (human) origin, the acoustic images seldom have the resolution necessary to definitively distinguish cultural features from other seafloor features and debris. The method used in this evaluation was first to conduct a comprehensive review of all data in its original full resolution format. Of the 592 acoustic seafloor features that were screened in the analysis, over 42 percent of the features were determined to be seafloor crab or lobster pots. These pots and traps are used frequently by commercial fishermen in the channel waters to harvest lobsters or crabs for sale on the local market. The weighted pots are generally made out of a wood or wire-mesh frame in which bait is placed inside to attract the lobsters or crabs. A rope with a small buoy extends from the pot to the surface so that the fishermen can identify and retrieve their pots.

Over the years, many pots have been lost or abandoned by fishermen, and remain for long periods as seafloor debris throughout the Project area. There are various ways that pots can become abandoned or lost by the fishermen. A common occurrence is when a boat unknowingly passes over the surface marker buoy and cuts the pot line, ultimately leaving the pot unrecoverable by the fishermen. Also, high surf and wind associated with winter storms occur more frequently along the coastline of the northern Santa Barbara Channel during the winter months of the open-lobster fishing season. These oceanographic forces can also cause the surface marker buoys to become detached, leaving the rope suspended in the water column and the pot again unrecoverable by the fishermen. Although the acoustic signature of the pots on the seafloor is small, the air-filled lines that project upward result in a strong acoustic signature, often extending well above the seafloor. This type of anomaly accounts for the majority of the seafloor features identified in the screening analysis.

Over 18 percent of the features in the initial screening database were identified as seafloor debris, consisting of naturally-occurring or manmade objects that are not of cultural significance. Some readily identifiable seafloor features in the screening dataset were clearly associated with existing equipment and pipelines. They included nearshore outfalls near the EOF and LFC facilities, and the six EMT moorings, each consisting of an anchor, attached chain, and surface buoy. This mooring spread is currently used by the Barge *Jovalan* during oil-loading operations. Other prominent seafloor features were artificial and naturally occurring reefs that accounted for over six percent of the features in the screening database. Many artificial reefs were produced by demolition of the oil piers shown in Figure 4.6-2. Natural reefs, although few in number, covered larger areas of the seafloor as described in Section 4.5 Biological Resources Offshore. Other seafloor features determined to be debris of non-cultural interest were generally large, up to 50 feet (15 m) in length, and occurred randomly throughout the survey area.

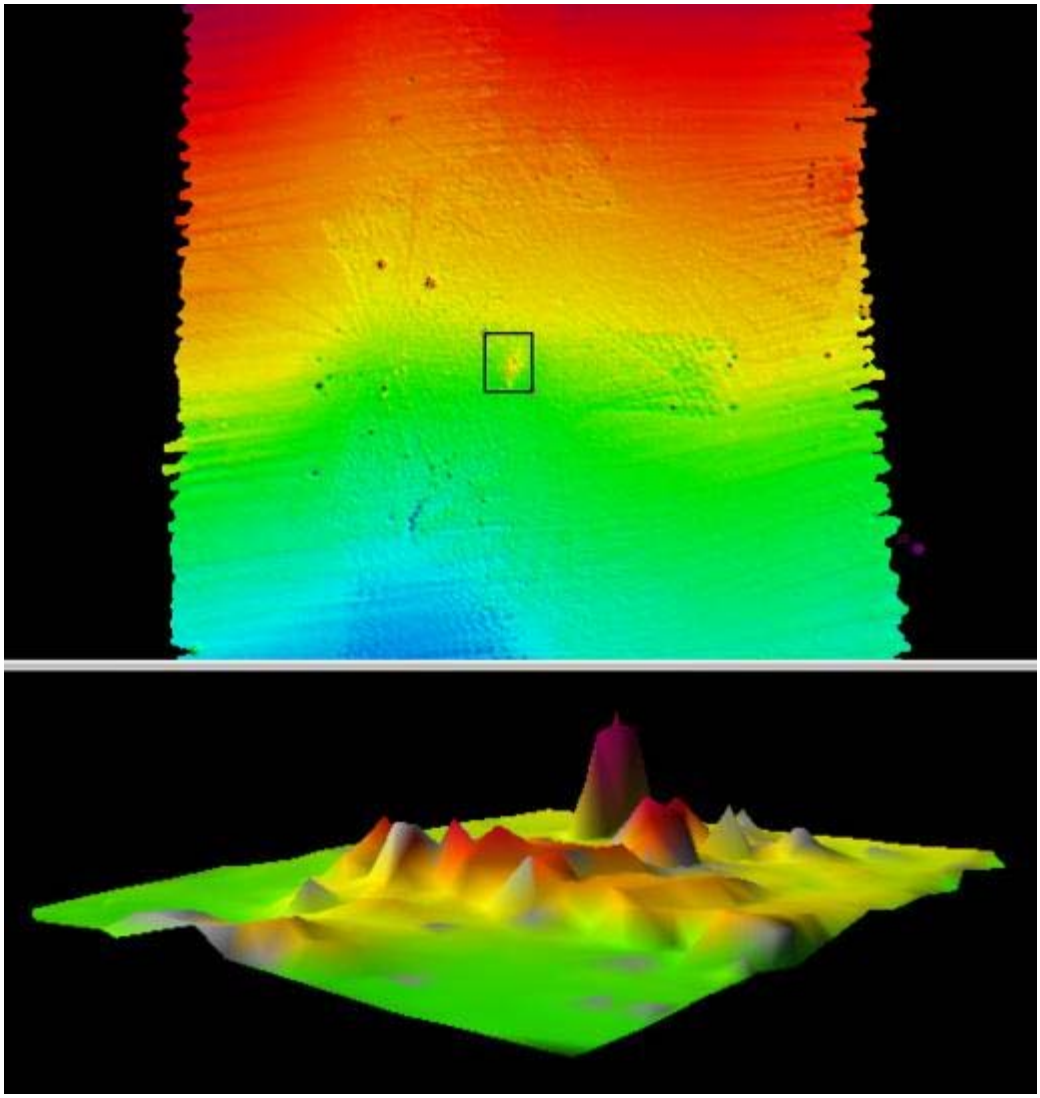
Natural hydrocarbon seeps also provide a strong acoustic signature and three known seeps and one seepage area were identified in the screening database. The largest seep is the Shane Seep, which is found within the EMT offshore loading area. The two remaining identifiable seeps, the Holoil and Sea Dog Seeps, as well as a dispersed seepage area were all found within the survey swath along the existing pipeline route to the EOF. The slightly angular character of acoustic signature number 530, which was observed near the Holoil seep, and some uncertainty as to the seep's currently level of activity, led to the inclusion of that seafloor feature in the list features of potential cultural significance (Table 4.6-1).

Table 4.6-1
Seafloor Features of Potential Cultural Significance

Feature Number	Feature Description	Maximum Lateral Dimension (m)	Maximum Vertical Relief (m)	Longitude	Latitude
917	Brant Debris	20	1.0	-120.020453	34.447009
918	Brant Debris	4	2.4	-120.020917	34.447401
919	Brant Debris	3	4.4	-120.021191	34.447489
920	Brant Debris	2	7.0	-120.021103	34.445404
921	Brant Debris	1	4.2	-120.021276	34.447594
922	Brant Debris	2	2.2	-120.022174	34.445652
576	Bow Shape	28	1.0	-119.919699	34.404603
761	Bow Shape	22	1.0	-119.913066	34.406799
884	Bow Shape	30	-2.2	-120.008438	34.424085
530	Angular Feature	12	5.0	-119.907716	34.409232
591	Angular Feature	11	12.0	-119.918654	34.403999
731	Angular Feature	12	16.2	-119.915977	34.389102
738	Angular Feature	12	9.6	-119.904103	34.389088
741	Angular Feature	13	2.4	-119.905201	34.389168
826	Angular Feature	50	13.2	-119.956300	34.400886
857	Angular Feature	9	3.4	-119.989247	34.409957
733	Aspect Ratio	58	10.0	-119.913904	34.390830
807	Aspect Ratio	43	6.2	-119.943375	34.397279
853	Aspect Ratio	22	8.8	-119.985547	34.409363
889	Aspect Ratio	18	17.4	-120.013302	34.426680
890	Aspect Ratio	21	14.6	-120.015141	34.428419
908	Aspect Ratio	7	-4.4	-120.032002	34.443435

A total of 22 seafloor features of potential cultural significance were identified in the initial screening database (Table 4.6-1). Six of the features were debris associated with the shipwreck of the Vessel *Brant*. Debris from the *Brant* was apparent as various features of low relief scattered over an area of 850 acres (3.4 hectares) (Figure 4.6-3). The scattered distribution of the debris resulted because the abandoned vessel remained under power as it burned and apparently did not sink intact at one location on the sea surface, as described below. Many pieces of the shipwreck were of low relief, having been buried in sediment over time and leaving limited portions exposed. Although *Brant* shipwreck is not likely to be impacted by the Project or its alternatives, it was investigated to confirm its provenance and extent. For example, some shipwreck databases locate the wreck site well offshore of its actual location as shown by the two entries for *Brant* near 120°W in figure 4.6-1. An ROV dive confirmed the debris to be that of the *Brant*.

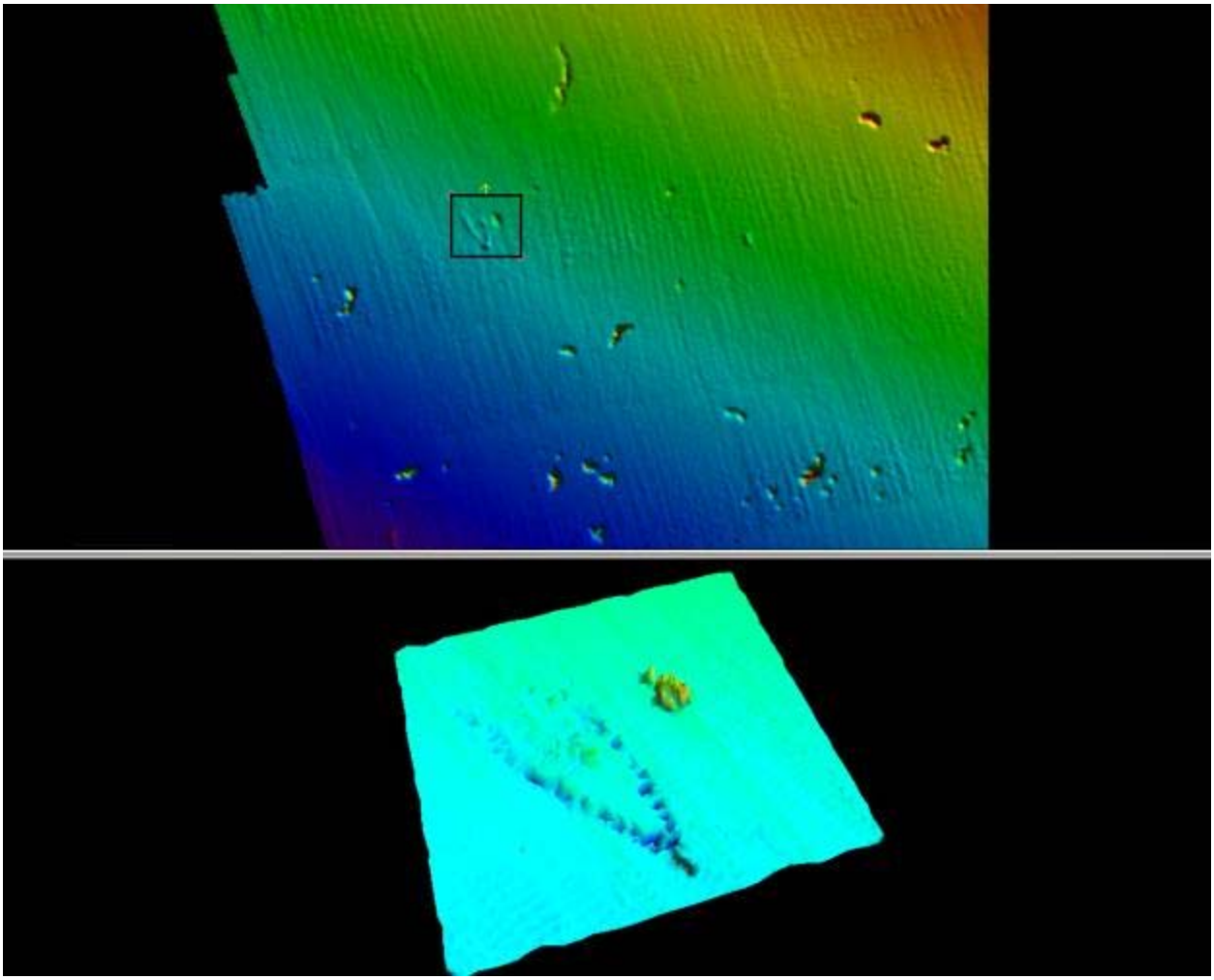
Figure 4.6-3
Debris from the Vessel *Brant*



Other features determined to be of potential cultural significance were identified based on the criteria listed above focusing mostly on aspect ratios, angular features, and the surrounding geology. Nevertheless, distinguishing an underwater shipwreck ballast pile from a natural seafloor rock outcropping is challenging. A ballast pile may lay transverse to the strike of an area's rock exposures, or exhibit something in the reflection that does not appear natural, such as a right angle within the acoustic signature. There are interesting seafloor features in the data, but the criteria for including them in Table 4.6-1 was based solely on width versus length ratios. Watercraft lengths are generally three to six times their beam width, so isolated outcrops can resemble the remains of a historic or prehistoric vessel regardless of size.

Three features were identified as being potential vessels based on their length to width ratios as well as their shapes that resemble that of a ship with a narrow nose, resembling the bow, and the widest area at the center of the body. Figure 4.6-4 shows one of the potential shipwrecks and the distinct vessel-like shape of the feature.

Figure 4.6-4
Potential Shipwreck at Seafloor Feature Number 576



However, given that the outline of the feature is a depression, it is likely that the feature is a scars that resulted from bottom trawling. Bottom trawling is a form of fishing common in the Project area in which a net is towed along the seafloor. In contrast, a sunken vessel would likely be partially exposed above the seafloor, as is the case with the *Brant* debris, which has slight vertical relief despite extensive burial. However, without independent confirmation, Features 576, 761, and 884 cannot be ruled out as being sunken vessels. On the other hand, Feature 576 was 700 m from the existing pipeline corridor and is

unlikely to be impacted by Project activities. Although Feature 761 was located along the existing pipeline route, no visual evidence of artifacts or other anthropogenic material was observed during ROV surveys. Feature 884 was highly localized along the alternative offshore pipeline route and can be easily avoided by slightly modifying the route if it is determined to be culturally significant.

The remaining features listed in Table 4.6-1 were selected as having potential cultural significance for either having sharp 90-degree angles, or for having a length to width ratio typical of vessels. However, additional insight into the physical nature of these features cannot be determined from the bathymetric survey data alone, and further research into the actual cultural significance of some of the features is warranted if the Project or its alternatives are likely to impact them. In that regard, nine of the remaining thirteen features (731, 733, 807, 826, 853, 857, 889, 890, and 908) lie along one of many possible alternative offshore pipeline routes. These features would only be of concern if that alternative was selected, and they could be avoided by rerouting if additional investigation of these features finds it warranted. Similarly, Features 530 and 591 are located more than 1300 feet (400 m) from the existing pipeline corridor where project activities are likely to occur; while others (Feature 738, 741) lie offshore of Platform Holly.

Most of the angular features found in the study area have a characteristic shape as Feature 738 (Figure 4.6-5). Two sides of nearly equal length intersect at nearly a right angle. Right angles are generally not a naturally occurring shape on the seafloor and it is a good indication that the feature may be of cultural significance. However, the determination based solely on the bathymetric data is not conclusive, and in the case of Feature 738, which is near Platform Holly, it is likely that the debris is related to platform operations.

The historical record of shipwrecks identifies five possible shipwrecks near the Project area (Table 4.6-2, Figure 4.6-6). Only one was definitively identified in the field survey. A literature review of shipwrecks conducted as part of this EIR provided site-specific details and histories for these five shipwrecks. Narratives by Ruhge (2000) and Wheeler (1984), lend insight into the great degree of uncertainty in the location of the shipwrecks. A description of the five shipwrecks follows.

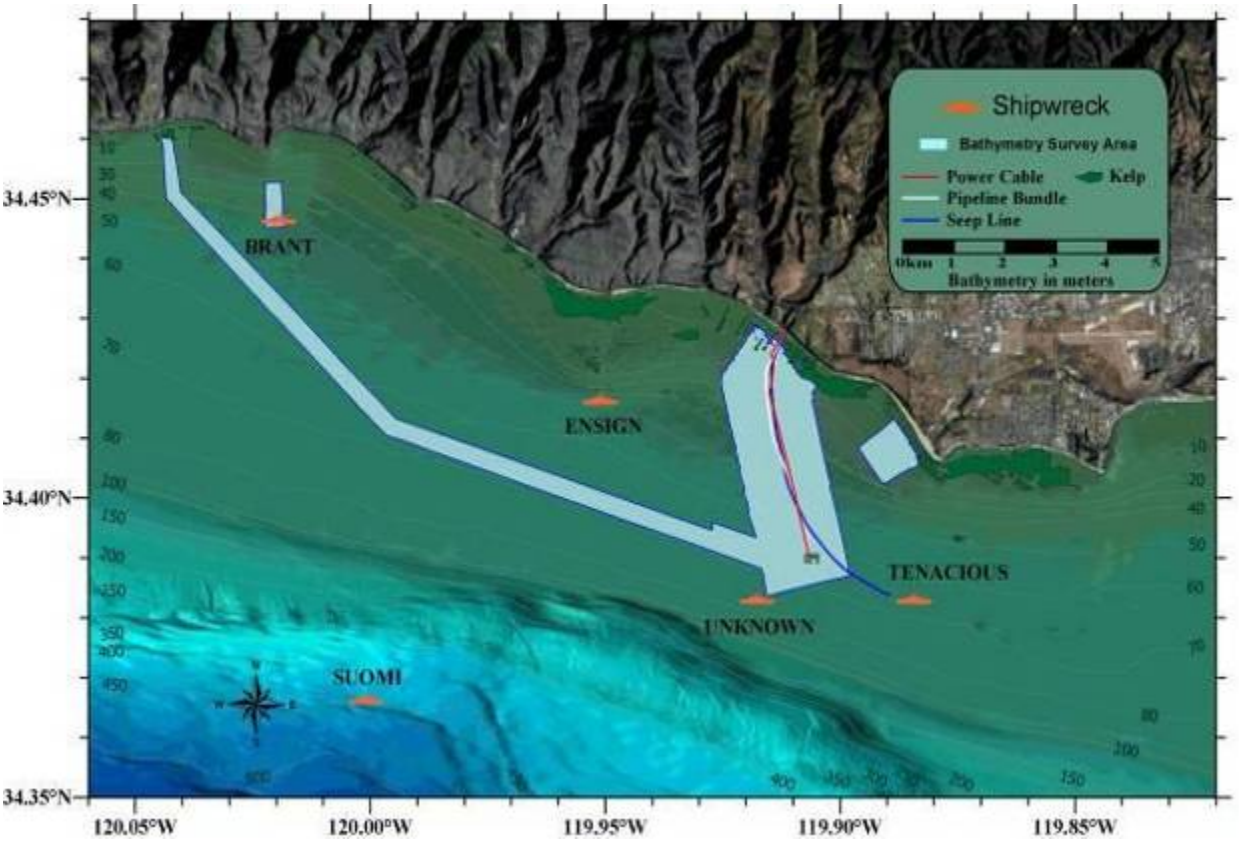
Figure 4.6-5
Angular Feature Number 738

Table 4.6-2
Shipwrecks in the Project Vicinity

Vessel Name	Type	Year Built	Date Lost	Tonnage	Length	Latitude	Longitude
Brant [1]	Oil Screw	1926	8-May 1960	149	96 ft	N34°26'48.43"	W120°01'10.43"
Ensign[2]	Four-Masted Schooner	1904	20-Jan-1909	618	>150 ft	N34°24'59.99"	W119°57'03.40"
Suomi [2]	Racing Yacht	---	22-Apr-1955	---	49 ft	N34°21'59.99"	W120°00'03.40"
Tenacious[1,2]	---	---	---	---	---	N34°23'00.00"	W119°53'03.39"
Unknown[2]	---	---	---	---	---	N34°22'59.99"	W119°55'03.40"

Sources: [1]NOAA Dogs Obstruction Database; [2]Bureau of Land Management, 1978

Figure 4.6-6
Shipwrecks in the Project Vicinity



Brant. A discrepancy exists between the NOAA obstructions database and the shipwrecks database that places the Brant's location to be over 12 miles away from one another. The inconsistency is mediated by the literature that places the shipwreck at the coordinates given in the NOAA database, as well as the high resolution bathymetric data that show the remains of the 149-ton Brant to be about one mile offshore of El Capitan State Beach. The location is adjacent to the location where the alternative offshore pipeline route lands at the LFC facility west of El Capitan. However, the Brant lies approximately 0.7 mile (1,130 m) to the east, so its cultural significance is not likely to be impacted by this alternative. However, its potential ecological importance is described in more detail in Section 4-5 (Biological Resources Offshore),

The ROV dive conducted on 4 February 2007 confirmed the Brant's location. It documented evidence of a sunken ship at a depth of 136 feet (41.5 m) that had been extensively dismantled and spread over the ocean floor in a manner that is consistent with the following report of its sinking (Wheeler 1984).

"*On May 8, 1960, the 96-foot long oil exploration Vessel Brant caught fire while off El Capitan. Fearing the boat would explode, the crew of eight abandoned the ship hurriedly, jumping into the water. As if angry at its maltreatment, the Brant continued to run under power, in circles, with no one at the helm, for several miles until it finally sank. The eight men were rescued, fortunate not too have been run over by the burning boat.*"

Ensign. The sailing vessel Ensign was a 150-foot-long four-masted schooner that displaced 618 tons. It grounded on the reef of Naples Point on 20 January 1909, when dense fog made navigation difficult. Waves forced the Ensign further along the saw toothed reef, which severely damaged the hull and did not allow Captain Melberg to navigate off of the treacherous reef. Eventually, waves forced the ship onto the shore where it was abandoned. After years of heavy winter surf and artifact collectors taking their toll on the ship nothing remains of the Ensign today (Ruhge 2000). Again, the two shipwreck databases that identify the Ensign, CSLC and BLM, are inconsistent at locating the ship. The 15.76 mi (25.36 km) discrepancy between the two databases places the coordinates from the BLM database closest to the actual location of the shipwreck. However, the BLM database places the Ensign about 1.25 mi (two km) offshore of Naples point. In contrast, the shipwreck was extensively photographed when it was grounded on the shoreline. The BLM location is shown in Figure Map 4.6-1 but it should be noted that the actual location of the shipwreck is along the shoreline, and even farther removed from potential impacts from the proposed Project and its alternatives.

Suomi The 49-foot racing vessel Suomi had a collision with another ship, Parramatta, on the morning of 22 April 1955. The collision left the five man crew dead with only one body ever recovered. The body that was recovered was missing one leg that was presumed to have been cut off by the vessel's propeller during the accident (Wheeler 1968). The crew of the Swedish freighter Parramatta struck the smaller Suomi without hearing or seeing the collision. After sensing that they had hit something when they saw a light in their wake the crew of the Parramatta notified the Coast Guard. The exact location of the sunken Suomi is not known but is presumed to be about nine miles south-west of Platform Holly (which was not yet constructed at the time) based on the coordinates given by the Parramatta crew. The location is not along the alternative pipeline route and a vessel as large as the Suomi does not appear on the high-resolution bathymetric data collected as part of this EIR.

Tenacious. The Tenacious was reported to have sunk 1.3 mi (2.1 km) southeast of Platform Holly, in both the BLM and NOAA databases. However, the reported position lies within one of the largest oil seeps in the region and close to the seep tent. Also, no literature was found that described the shipwreck. It the location is accurate, it can be presumed that the wreck of the Tenacious would not be impacted by the proposed Project activities.

Unknown. The fifth ship is an unknown vessel from the BLM database that has no literature to confirm its history or wreck location. The database locates the shipwreck 0.8 mi (1.28 km) south-west of Platform Holly. This location is well offshore of the Project area, and if accurate, the shipwreck would not be impacted by the proposed activities. The reported location also lies just outside of the survey area and there was no definitive evidence of its presence in the bathymetric data.

Offshore Paleontological Resources

Since the height of the last glaciation about 18,000 years ago, warming climates have melted much of the polar ice caps and resulted in rapidly rising sea levels that have covered much of the continental shelf. It has been recognized that the now submerged portions were likely occupied by humans during the late Pleistocene and early Holocene eras, leading to the assumption that early cultural sites may now lay offshore. However, offshore paleontological resources are generally found on rocky substrates rather than the sandy bottom conditions prevalent in the Project area. Paleontological sites are normally discovered in cliffs, ledges, steep gullies, or along wave-cut terraces where vertical rock sections are exposed. Additionally, any fossils found in the Project area

would likely be widely occurring, abundant, fairly well preserved, and predictable as to their association with a larger fossil site. Therefore, the same or similar fossils can be located at any number of sites throughout Central California, and are not endemic to the Project area.

4.6.2 Regulatory Setting

Federal

Cultural Resources

Any shipwrecks discovered in Federal waters would be covered under the Federal Abandoned Shipwreck Act in accordance with section 43 U.S.C. 2105(d) that states that any shipwreck that is on Federal land is the property of the United States Government.

State

Cultural Resources

The California Coastal Act of 1976 addresses impacts on archaeological resources. Policy 30244 requires reasonable mitigation measures where development would adversely impact archaeological resources.

The State CEQA Guidelines sections 15064.5 and 15126.4 provide the basis for determining the significance of archaeological and historical resources. Their application to the proposed Project is discussed below in section 4.6.3.

The California Coastal Act of 1976 (Public Resources Code [PRC] sections 30000 *et seq*.), as amended, addresses impacts on archaeological resources. Section 30244 requires reasonable mitigation measures where development would adversely impact archaeological resources as identified by the State Historic Preservation Officer.

The State CEQA Guidelines section 15064.5 provides the basis for determining the significance of archaeological and historical resources. Their application to the proposed Project is discussed below in Section 4.6.3, Significance Criteria.

Paleontological Resources

There is no Federal legislation designed specifically for the management and protection of paleontological resources, and most states do not have laws or guidelines for the preservation of fossil material. Professional societies such as the Society of Vertebrate

Paleontologists (SVP) and the Board of Earth Science of the National Research Council have attempted, thus far unsuccessfully, to get Congress to approve legislation for paleontological resources. Under strong pressure from the SVP and other organizations, the U.S. House of Representatives and the Senate are considering bills that strengthen the protection of vertebrate fossils through stronger penalties and provide clear management guidelines to Federal land managers.

The California Coastal Act provisions are ambiguous and generalized as related to paleontological resources. Where development would adversely impact paleontological resources, as identified by the State Historic Preservation Officer, reasonable mitigation measures are required. However, the statute does not indicate a specific procedure for mitigating the loss of paleontological resources.

Section 5097.5 of the California Public Resources Code (PRC) prohibits excavation or removal of any "vertebrate paleontological site or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands." Section 30244 requires reasonable mitigation of adverse impacts to paleontological resources from development on public land. Penal Code Section 623 contains regulations for the protection of caves, including their natural, cultural, and paleontological contents. It specifies that no "material" (including all or any part of any paleontological item) will be removed from any natural geologically formed cavity or cave.

Local

Cultural Resources

The Santa Barbara County Coastal Plan and the Goleta General Plan have several polices that address the preservation of significant cultural resources. Policy 10-1 in the County Plan states that all available measures must be explored to avoid development on significant historic, prehistoric, archaeological and other classes of cultural sites. Policy 10-2 states that project design shall be required to avoid impacts on archaeological or other cultural sites if possible. Policy 10-3 states that where avoidance of construction impacts is not possible, adequate mitigation shall be required designed in accord with State Office of Historic Preservation and Native American Heritage Commission guidance. Policy 10-4 states that indirect activities including off-road vehicle use, unauthorized artifact collection or similar actions capable of destroying or damaging archaeological or cultural sites is prohibited. Policy 10-5 states that a Native American representative shall be consulted when development is proposed that would potentially impact significant archaeological or cultural sites.

Policies OS.8.3, 8.4, 8.5, 8.6 and 8.7 of the Goleta General Plan address protection of Native American and paleontological resources. Policy OS 8.3 requires preservation of cultural resources from destruction by avoidance. OS 8.4 requires preparation of a Phase 1 cultural resources inventory by a qualified archaeologist for development in areas of known archeological sensitivity. OS 8.5 requires mitigation to disturbances that may occur in areas where avoidance is infeasible. Mitigation would be imposed in accordance with cultural beliefs of the affected populations. OS 8.6 requires onsite monitoring by a qualified archaeologist and appropriate Native American observer for all grading, excavation and earth moving in areas identified as archaeologically sensitive. Finally, OS 8.7 requires that work be stopped and the site studied in the event that substantial paleontological resources are encountered.

Santa Barbara County Cultural Resource Guidelines provide direction to archaeologists on what types of research topics and research questions are appropriate to determine the significance of an archaeological site. The city of Goleta adopted the County Cultural Resource Guidelines upon incorporation.

Paleontological Resources

There are no local guidelines, within the Santa Barbara County Coastal Plan, that address the preservation of or consideration for paleontological resources during the planning process.

4.6.3 Significance Criteria

Cultural Resources

The State CEQA Guideline 15064.5 provides significance threshold criteria for determining a substantial adverse change to the significance of a cultural resource:

> Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired.

The significance of a historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that:

(A) Justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources;

(B) Account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in a historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code; or

(C) Convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of the CEQA.

The State CEQA Guidelines sections 15064.5 and 15126.4 define a significant cultural resource, either prehistoric or historic, as a "historical resource." A historical resource is defined as:

> A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4850 *et seq*.).

A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in a historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

Any object, building, structure, site, area, place, record, or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852). These resources of historic significance possess the following attributes:

- Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

- Associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1[k] of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1[g] of the Public Resources Code) does not preclude a lead agency from determining that the resource may be a historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1.

Paleontological Resources

The State CEQA Guidelines Appendix G, Environmental Checklist Form, provides a suggested significance threshold for paleontological resources as a threshold that would:

> Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

EOF

If present, unknown archaeological sites that would be buried approximately ten feet below the EOF and would date to approximately 10,000 years ago would have the potential to increase understanding of the Paleoindian Period, and be likely to yield information important in prehistory (Criterion d.). These unknown sites are, therefore, potentially significant resources under the CEQA.

Onshore Pipeline

If present, intact portions of CA-SBA-139, CA-SBA-83, CA-SBA-1676, and CA-SBA-1733 would be likely to yield information important in prehistory (Criterion d.). CA-SBA-139, CA-SBA-83, CA-SBA-1676, and CA-SBA-1733 are, therefore, potentially significant resources under the CEQA.

EMT

If present, intact portions of CA-SBA-1327 and CA-SBA-2341 would have the potential to help us understand how prehistoric populations exploited nearby foods, together with marine resources in the vicinity, and be likely to yield information important in prehistory (Criterion d.). CA-SBA-1327 and CA-SBA-2341, therefore, are potentially significant resources under the CEQA.

4.6.4 Impact Analysis and Mitigation

Onshore Cultural Resources

Direct impacts on cultural resources result from ground disturbances directly and immediately caused by facility operation or maintenance. Indirect impacts resulting from increased access to archaeological sites (i.e., construction or facility employees) include unauthorized artifact collecting.

Impact CR-1: Disturbance and Damage to Cultural Resources During Grading

Grading and excavation associated with construction of the proposed Project at the EOF involves ground disturbing activities and could potentially result in disturbance to unknown archaeological sites buried below the EOF (Potentially Significant Class II).

Impact Discussion

If potentially intact cultural remains buried below the EOF were encountered during grading and excavation, the potential for destruction of these remains would be a significant impact.

Mitigation Measures

MM CR-1a. Archeological Monitoring: All ground disturbances associated with construction of the proposed Project at the EOF that extend into soils shall be monitored by a qualified archaeologist and a local Native American representative as per the Goleta General Plan OS 8.6 and OS 8.7. If cultural resources of potential importance are uncovered during construction, the grading shall cease and the city shall be notified within 24 hours. A qualified archaeologist shall prepare a report assessing the significance of the find and provide recommendations regarding

appropriate disposition. Disposition will be determined by the city in conjunction with the affected Native American nation.

MM CR-1b. Pre-construction Workshop: A pre-construction workshop shall be conducted by a qualified archaeologist and a Native American representative from the affected Native American Nation. All construction personnel who would work, during any phase of ground disturbance, shall be required to attend the workshop. To ensure participation in the workshop, attendance records will be monitored for all personnel who attend the workshop. Additionally, upon completion of the workshop, hardhat stickers will be issued to denote the completion of workshop training. The workshop shall:

1. Review the types of archaeological artifacts that may be uncovered;
2. Provide examples of common archaeological artifacts to examine;
3. Review what makes an archaeological resource significant to archaeologists and local Native Americans;
4. Review procedures that shall be used to record, evaluate, and mitigate new discoveries; and
5. Describe reporting requirements and responsibilities of construction personnel.

Rationale for Mitigation

Mitigation Measures **MM CR-1a** and **MM CR-1b** would help reduce the potential for impacts on unknown, potentially significant cultural resources buried below the EOF.

Impact CR-2: Construction Grading and Excavation at CA-SBA-139

Grading and excavation associated with construction of the proposed Project would potentially result in disturbance to unknown CA-SBA-139 deposits (Potentially Significant, Class II).

Impact Discussion

If potentially intact cultural remains were encountered during grading and excavation, the potential for destruction of these remains would be a significant impact.

Mitigation Measures

MM CR-2a. Avoid Disturbances to CA-SBA-139: The new onshore pipeline shall be redesigned or relocated, to the extent feasible, in order to avoid disturbances to CA-SBA-139. Directional drilling shall be considered as a method to avoid the site.

MM CR-2b. Phase 2 Study: A Phase 2 significance assessment investigation shall be conducted if avoidance of CA-SBA-139 is not feasible. And, if found to be significant, a Phase 3 data recovery mitigation program shall be conducted.

MM CR-2c. Archeological Monitoring: All ground disturbances associated with construction of the new onshore pipeline within the documented CA-SBA-139 site boundary shall be monitored by a qualified archaeologist and a Native American representative from the affected Native American Nation.

MM CR-2d. Avoidance and Unanticipated Discoveries Plan: Prepare an Avoidance and Unanticipated Discoveries Plan, as per CCC requirements, including provisions for an archeological monitor, data recovery program, Native American monitor, and guidelines addressing immediate actions to be taken should a discovery be made.

Rationale for Mitigation

Mitigation Measures **MM CR-1b** through **MM CR-2c** would help reduce the potential for impacts on potentially significant cultural resources CA-SBA-139. Mitigation measure **MM-CR-2d** would address considerations should a discovery be made during excavation.

Impact CR-3: Grading and Excavation Access to CA-SBA-139

Grading and excavation associated with construction of the proposed Project would potentially result in a short-term increase in access to archaeological artifacts associated with CA-SBA-139 and the potential for unauthorized collection (Potentially Significant, Class II).

Impact Discussion

CA-SBA-139 would potentially be exposed during grading and excavation, and personnel would have increased access to artifacts during the short-term construction period. Potential unauthorized collection of artifacts during grading and excavation would contribute to the destruction of site integrity and would be a significant adverse impact that can be reduced *below significance* (Class II) with implementation of Mitigation Measures **MM CR-1b** and **MM CR-2c.**

Mitigation Measures

Mitigation Measures **MM CR-1b** and **MM CR-2c** would reduce potential impacts on cultural resources resulting from unauthorized artifact collection.

Rationale for Mitigation

Mitigation Measures **MM CR-1b** and **MM CR-2c** would help minimize the potential for increased illicit artifact collection during grading and excavation activities by educating construction workers regarding the importance of preserving the location and integrity of individual archaeological artifacts.

Impact CR-4: Grading and excavation access to CA-SBA-83, CA-SBA-1676, and CA-SBA-1733

Grading and excavation associated with construction of the proposed Project would potentially result in a short-term increase in access to and the potential for unauthorized collection of archaeological artifacts associated with CA-SBA-83, CA-SBA-1676, and CA-SBA-1733 (Potentially Significant, Class II).

Impact Discussion

Even though subsurface deposits at CA-SBA-83, CA-SBA-1676, and CA-SBA-1733 are of questionable integrity, artifacts associated with the sites would potentially be exposed during grading and excavation, and construction personnel would have increased access to artifacts during this time. Potential unauthorized collection of artifacts during grading and excavation would be a significant adverse impact that can be reduced *below significance* (Class II) with implementation of Mitigation Measures **MM CR-1b** and **MM CR-4a.**

Mitigation Measures

MM CR-4a **Archeologist Monitoring** All ground disturbances associated with construction of the new onshore pipeline within the documented CA-SBA-83, CA-SBA-1676, and CA-SBA-1733 site boundaries shall be monitored by a qualified archaeologist and a local Native American representative.

Mitigation Measures **MM CR-1b** and **MM CR-4a** would reduce potential impacts on cultural resources resulting from unauthorized artifact collection.

Rationale for Mitigation

Mitigation Measures **MM CR-1b** and **MM CR-4a** would help minimize the potential for increased illicit artifact collection during grading and excavation activities by educating construction workers regarding the importance of preserving individual archaeological artifacts.

Impact CR-5: Oil Spill Impacts

Potential oil spills from the operational pipeline have the potential to affect cultural resources resulting from subsequent cleanup and remediation activities (Potentially Significant, Class II).

Impact Discussion

The primary concern would be spills in areas adjacent to coastal drainages that have a high sensitivity for prehistoric archaeological resources. (Potentially Significant, Class II).

Mitigation Measures

Mitigation Measure **MM CR-1b** would reduce potential impacts on cultural resources resulting from cleanup and remediation activities of potential pipeline oil spills.

Rationale for Mitigation

Mitigation Measure **MM CR-1b** would help reduce the potential for impacts on potentially significant cultural resources.

Impact CR-6: EMT Decommissioning

Activities associated with the decommissioning of the EMT would potentially result in disturbance to unknown CA-SBA-1327 and CA-SBA-2341 deposits (Potentially Significant).

If potentially intact cultural remains were encountered during decommissioning of the EMT, the potential for destruction of these remains would be a significant impact.

Mitigation Measures

MM CR-6a All ground disturbances associated with decommissioning of the EMT within the documented CA-SBA-1327 and CA-SBA-2341 site boundaries shall be monitored by a qualified archaeologist and a local Native American representative.

Mitigation Measures **MM CR-1b** and **MM CR-5a** would reduce potential impacts on cultural resources resulting from decommissioning of the EMT.

Rationale for Mitigation

Mitigation Measures **MM CR-1b** and **MM CR-5a** would help reduce the potential for impacts on potentially significant cultural resources CA-SBA-1327 and CA-SBA-2341.

Residual Impacts

Information regarding this potential impact is being provided for information purposes only**,** since a complete application for abandonment and reclamation of the EMT site has not been submitted to Santa Barbara County. In accordance with the County of Santa Barbara Land Use and Development Code, Section 35.56, the Applicant would need to obtain a Development and Reclamation permit**,** which addresses the removal of above ground infrastructure, remediation of contamination, and restoration of the site. This permit would require listing the locations of all equipment to be removed and equipment that would remain, both above ground and underground, and the type and extent of all contamination and proposed remedial actions to the level of detail that can be evaluated through environmental review.

Offshore Cultural Resources

Direct impacts on cultural resources result from offshore disturbances directly and indirectly caused by modifications to offshore facilities and drilling from Platform Holly.

Indirect impacts resulting from increased access to archaeological sites, i.e., construction or facility employees, including unauthorized artifact collecting is a potential indirect impact.

If suspected cultural features are determined to be significant, their eligibility to the National Register of Historic Places should be evaluated and State Historic Preservation Office approved mitigation of the resource should be conducted. All such efforts should be performed only after discussions with the appropriate State agencies and under the direction of a qualified maritime archaeologist. A professional quality report of results must be prepared for review by the appropriate jurisdictional agency with copies approved for public dissemination.

The CSLC has jurisdiction over the State's tidal and submerged lands and administers the Shipwreck and Historic Maritime Resources Program (Public Resources Code sections 6309, 6313, and 6314).

Public Resources Code section 6313(a) provides: "The title to all abandoned shipwrecks and all archaeological sites and historic resources on or in the tide and submerged lands of California is vested in the State. All abandoned shipwrecks, all submerged archaeological sites, and submerged historic resources of the State shall be in the custody and subject to the control of the commission for the benefit of the people of the State of California. The commission may transfer title, custody, or control to other state agencies or recognized scientific or educational organizations, institutions or individuals by appropriate legal conveyance."

Permits will be required that involve one or more Federal agencies. The U.S. Army Corps of Engineers has responsibility for navigable waters. The MMS, under various Federal laws and regulations, ensures that regulated outer continental shelf activities do not adversely affect significant archaeological resources. The National Historic Preservation Act of 1966, as amended, (16 USC 470, P.L. 95-515) under section 106, requires Federal agencies to identify historic properties their actions could affect, determine whether or not there could be a harmful or adverse affect, and if so, to try to avoid or reduce the effect. The section also requires consultation with State historic preservation officers and tribal historic preservation officers.

The Archaeological and Historic Preservation Act of 1974 (16 USC 469-469c, PL93-291) requires Federal agencies to notify the Secretary of the Interior when they find that any federally permitted activity or program may cause irreparable loss or destruction of significant scientific, prehistoric, historical, or archaeological data.

Impact CR-7: Effects on Archaeological Resources, Including Shipwrecks

Activities could damage, disrupt, or adversely diminish the quality of an important prehistoric or historic archaeological resource or a historical resource such that its integrity would be diminished (Less than Significant, Class III).

Although there are five shipwrecks that have been identified in the general vicinity of the Project, only two have been physically located and neither of them would be extensively impacted by the Project activities. The *Brant* is the only ship that has been identified in the Project area using high-resolution bathymetric data, and while it is close to the alternative offshore pipeline route, it is over 7.5 miles (12.2 km) from the project activities on Platform Holly or along the existing pipeline corridor to the EOF. The second ship known to exist in the Project area, *Ensign*, was widely documented and photographed on the shoreline adjacent to Naples reef, and no remains of the ship are present today after years of winter storms and artifact collectors have completely broken apart and removed all parts of the ship. The remaining three ships documented to have wrecked in the area do not have known exact locations; however, the high-resolution bathymetric data compiled for this EIR does not reveal any definitive evidence of shipwrecks other than the *Brant.* Based on this data, it is presumed that all other shipwrecks are located outside of the Project area and, will not be potentially impacted by the Project.

Offshore Project activities include the drilling of new wells from Platform Holly and improvements to facilities. These activities are not likely to affect cultural resources. The proposed disposition is considered a less than significant impact (Class III). No mitigation is required.

Onshore Paleontological Resources

Potential ground disturbances associated with Project grading and excavation would occur within geologic rock formations known to include invertebrate fossils that are widespread, abundant, fairly well preserved, and not unique. Potentially significant vertebrate fossils are not expected in the Project site and vicinity. Because the potential for encountering important paleontological resources within the EOF, onshore pipeline, the EMT, and in the surrounding area are considered very low, potential impacts from ground disturbances associated with Project construction are considered an *adverse, but less than significant impact* (Class III).

Impact CR-8: Potential Disturbance to Paleontological Resources

Activities could damage or disturb paleontological resources including Chumash midden sites due to proposed drilling on Platform Holly and offshore modifications to existing facilities (Less than Significant, Class III).

Due to the mud and sand depositional environment of the Project area, as well as the age of any artifacts, it is presumable that any paleontological resources have been long-since buried. Previous research of the Project area completed for the ARCO 1986 EIR identified 67 potential paleontological resources (Chambers Group 1986). Modern data-collection techniques performed for this EIR used more accurate high-resolution bathymetric data and found that very few of the potential sites matched between the two datasets. It is possible that, over time, deposition and seafloor disturbance has either buried or moved the sources of the anomalies. However, it is more likely that the original anomalies were misidentified crab and lobster pots. Sites that appeared to be of potential concern in the new dataset were subsequently confirmed to be lobster and crab pots. The large high-relief angular acoustic signatures of these anomalies arise from long lines that are attached to the pots and float upward in the water column.

Prehistoric Chumash midden sites in the Project area have been described in very general terms that do not give great detail of their precise whereabouts within the Ellwood area. Furthermore, the sites are confined to the shallow waters and are not known to exist past depths of the 90 feet (27.5 m) isobath. If Project activities were to come into contact with an ancient midden site the impact would be significant and non-mitigable. However, offshore Project activities would not have an impact on the archaeological sites as many of the proposed activities are limited to the areas surrounding Platform Holly, which is considerably further offshore and far exceeds the 90 feet isobath. Additionally, the potential sites identified in the ARCO 1986 Coal Oil Point EIR were addressed because the project included installation of the offshore oil platforms. Any prehistoric cultural remains in the affected area would, therefore, have been impacted by the installation of the platforms and pipelines that followed. The proposed disposition is considered a less than significant impact (Class III). No mitigation is required.

Extension of Life Impact

The Applicant has stated that the proposed Project would not increase the life of the existing South Ellwood Field Facilities, which is currently defined by the operational life of Platform Holly until 2040, and would likely reduce the overall duration of oil and gas

production from existing facilities due to more efficient extraction of the resource. However, it is possible that increased oil and gas production from new wells drilled into the existing and proposed leases, formations (Lower Sespe) and fault blocks (North Flank and Eagle Canyon) could produce economically viable resources for a longer-than-expected period and increase the life of the existing facilities. Therefore, the impacts identified in Table 4.6-3 have the potential to occur over a longer period than assumed for the proposed project, exacerbating potentially adverse impacts.

Increasing the project duration and exposure of facilities to potential geological hazards could result in an increased likelihood of an oil spill impacting cultural resources and would be considered potentially significant but mitigable (Class II).

Table 4.6-3
Summary of Cultural Resources Impacts and Mitigation Measures

Impact	Impact Class	Mitigation Measures
CR-1: Disturbance and Damage to Cultural Resources During Grading	Class II	**CR-1a:** Archeological Monitoring **CR-1b**: Pre-construction Workshop
CR-2: Construction Grading and Excavation at CA-SBA-139	Class II	**CR-2a:** Avoid Disturbances to CA-SBA-139. **CR-2b:** Phase 2 Study. **CR-2c:** Archeological Monitoring. **CR-2d** Avoidance and Unanticipated Discoveries Plan
CR-3: Grading and Excavation Access to CA-SBA-139	Class II	See Mitigation Measures **CR-1b** and **CR-2a**.
CR-4: Grading and excavation access to CA-SBA-83, CA-SBA-1676, and CA-SBA-1733	Class II	**CR-4a:** Archeologist monitoring See Mitigation Measure **CR-1b**.
CR-5: Oil Spill Impacts	Class II	See Mitigation Measure **CR-1b.**
CR-6: EMT Decommissioning	Not Classified	**CR-5a:** Archeologist monitoring. See Mitigation Measure **CR-1b**.
CR-7: Effects on archaeological resources including shipwrecks	Class III	None Required
CR-8. Potential disturbance to paleontological resources due to Project activities	Class III	None Required

4.6.5 Impacts of Alternatives

No Project Alternative

Under the No Project Alternative, the new onshore pipeline would not be built, the modifications to the EOF would not be performed, and the EMT would not be decommissioned.

Potential for direct and indirect impacts on cultural resources from construction of the new onshore pipeline would be eliminated.

Impacts on cultural resources from transportation related to barge transportation would only occur in the event of an accident that resulted in a spill in an archaeologically sensitive area. Under the No Project Alternative, these potential impacts would continue.

Currently, lease agreements for the operations of the EMT will expire in 2013 and/or 2016 (see Section 2.0, Project Description). It is assumed that, under the No Project Alternative, after the lease expirations, the Applicant would pursue alternative means of crude oil transport such as pipeline or truck transportation. The impacts of these transportation modes are described in the Venoco Ellwood EMT Lease Renewal Project Draft EIR (CSLC 2007). Any future crude oil transportation options would be subject to appropriate agency review and approval.

No EOF Modification Alternative

Under this alternative, if the proposed upgrades to the EOF do not meet the requirements for a Limited Exception Determination (LED) with the city of Goleta, then no modifications would be allowed at the EOF. Modifications to the two-inch utility pipeline and the offshore improvements would still take place. The onshore pipeline and decommissioning and abandonment of the EMT would also take place.

Impacts **CR-1** through **CR-6** would be significant and adverse, but reduced *below significance* (Class II) with implementation of Mitigation Measures **MM CR-1a** through **MM CR-5a,** the same as would occur with the proposed Project.

Potential impacts to offshore cultural and paleontological resources would be the same as for the proposed Project and would be considered less than significant (Class III).

Holly Processing Alternative

Under this alternative, processing would be moved to Platform Holly and a large portion of the EOF equipment would be removed. The onshore pipeline would still be installed and utilized for transportation of the crude oil to the AACP. Impacts would be similar to the proposed Project except that there would be an increased opportunity for discovery of archeological remains at the EOF due to the increased decommissioning activities at the EOF. Therefore, impact **CR-1** would be somewhat greater, but impacts could still be mitigated to Class II with **CR-1a** and **CR-1b**. All other impacts would be the same as the proposed Project.

Las Flores Canyon Processing: Offshore Gas and Onshore Oil Pipeline

This alternative would require a new, 12 mile (19 km) offshore gas pipeline that would be constructed from Platform Holly to LFC. The new six-inch (0.15 m) gas pipeline would leave Platform Holly heading westerly in State waters within the Applicant's State lease PRC 3120. The route would continue westerly through State tidelands to a point offshore of LFC where it would landfall through a 3,500 feet (1,067 m) directional drill. The directional drill would be made from the LFC parking area north of Highway 101 to an ocean outfall located approximately 2,500 feet (762 m) from shore in water depths ranging between 35 feet to 50 feet (11 m to 15 m) below mean sea level.

Impact CR-9: Effects on Archaeological Resources, Including Shipwrecks

Activities could damage, disrupt, or adversely diminish the quality of an important prehistoric or historic archaeological resource or a historical resource such that its integrity would be diminished (Potentially Significant, Class II).

The potential for a new pipeline creates a significant impact if the new pipeline route would come into contact with a prehistoric cultural site or a shipwreck. Potential impacts to paleontological resources (Impact **CR-7**) would be adverse as the alternative proposed pipeline would run adjacent to known Chumash midden sites. In addition the *Brant* could likely be affected by a new offshore pipeline route to the LFC facility from Platform Holly because the *Brant* is located one mile south of El Capitan, and near the proposed route to the LFC facilities. Thus, a new impact, similar to Impact **CR-7,** would be potentially significant and adverse (Class II), but reduced with implementation of a measure that would require development and implementation of the pipeline around any cultural or paleontological resources identified along the proposed pipeline route.

The preliminary review of bathymetric data for the alternative Project area identified potential for the presence of shipwrecks of potential cultural resource value in the study area. Additionally, previous research (Chambers Group 1986) of the Project area identifies potential sites of paleontological concern. Since the proposed alternative pipeline route would be substantial, it is possible that a previously unknown cultural or paleontological resource could be damaged or destroyed during pipeline installation.

Execution of this alternative would require mitigation that would necessitate a more thorough survey of the pipeline route. With a comprehensive survey of the alternative Project area the pipeline would be routed around features of cultural significance, including shipwrecks. Since the location of the shipwreck is known and identifiable in the high-resolution bathymetric data available a new offshore pipeline could easily be routed around the shipwreck. Impacts on cultural resources from this alternative would be potentially significant (Class II).

Mitigation Measures

CR-9a. Prior to pipeline installation, the Applicant shall provide a detailed analysis of side scan sonar and magnetometer data for the proposed pipeline route between the shoreline and the 1,000 fathom depth contour. The analysis shall identify and analyze all magnetic and side scan anomalies that occur within the pipeline corridor, which is defined as the lateral distance of one kilometer (500 m on each side of the pipeline). The analysis shall also include the potential significance of each anomaly identified within the pipeline corridor. The Applicant must submit the side-scan sonar and magnetometer data, and the accompanying report which analyzes the data. Final approval from the State Lands Commission must be received prior to pipeline installation.

CR-9b. The Applicant shall hire a qualified archaeologist and Native American representative to analyze the pipeline route for the possibility of the occurrence of Chumash midden sites within the pipeline corridor. If a site of concern were to be identified by the archaeologist, the Applicant shall propose a new pipeline route that does not come into contact or disturb any prehistoric or ancient cultural sites.

Rationale for Mitigation

MM CR-3 would reduce potential impacts to cultural resources by discouraging the construction of the alternative pipeline in areas that could contain relics of historical, paleontological, or cultural importance.

Implementation of the above mitigation measures would identify and avoid disturbing known and previously unknown shipwrecks of potential cultural resource value and is sufficient to reduce potential impacts to a level of less than significant (Class III).

Las Flores Canyon Processing: Offshore Gas and Offshore Oil Pipeline

This alternative would be identical to the above listed alternative, except that the crude oil pipeline would be installed offshore, parallel to and at the same time as, the offshore sour gas pipeline and power cable. Modifications to Platform Holly would be the same as above, except that the new emulsion pipeline would be tied in to the existing pig launchers on the Platform. The EOF would be completely abandoned. Modifications to the LFC would be the same as above. The offshore pipelines would be installed as a bundle along with a new power cable. Construction requirements would be similar as above, except that additional pipe would need to be transported and the number of welding stations would increase by approximately two.

Impacts to offshore cultural and paleontological resources are severe and similar to Impact **CR-9** but could be reduced to below significance criteria (Class II) with the implementation of mitigation measure **CR-9a** and **CR-9b** to avoid cultural resources during the construction of the pipeline.

4.6.6 Cumulative Projects Impact Analysis

Prehistoric archaeological sites are non-renewable resources that have been destroyed at an alarming rate state-wide and locally. It has been estimated that more than 80 percent of all sites in coastal Santa Barbara have been destroyed by coastal development. Therefore, the assessment of potential cumulative impact on cultural resources within the proposed Project area considers these past activities resulting in loss of archaeological sites, along with other probable future project in the vicinity.

Cumulative projects (see Tables 4-1 through 4-3) would involve ground disturbances that would potentially impact cultural resources in an archaeologically sensitive area adjacent to freshwater sources.

In many cases, site redesign or use of fill could minimize potentially significant, adverse impacts. Total avoidance of cultural resources would not be reasonably expected, however, and increased human activity in the vicinity of cultural resources would lead to greater exposure, potential for unauthorized artifact collection and inadvertent disturbance during construction. Therefore, cumulative impacts to archaeological resources caused by past, present and future probable projects in the undeveloped coastal areas in the vicinity of the EOF, the new onshore pipeline, and the EMT are considered significant. The city of Goleta and Santa Barbara county both have policy considerations and standard mitigations for addressing the potential for ground disturbances that impact cultural resources, including requirements for surveys in archaeologically sensitive areas, field investigations to precisely delineate site boundaries, significance assessments and, when required to mitigate significant resources, data recovery programs. Construction monitoring by qualified archaeologists and local Native American representatives is also required for disturbances within archaeological site boundaries. These measures would ensure that cumulative impacts on cultural resources would be reduced to *less than significant*.